

IN THE US PATENT AND TRADEMARK OFFICE

Application Number: 10/698,988
Agent's Docket Number: NSL-014
Filing Date: October 31, 2003
Applicant: Brian M. Sager et al.
Application Title: INORGANIC/ORGANIC HYBRID NANOLAMINATE BARRIER FILM
Examiner: Marc A. Patterson
Art Unit: 1772

Declaration under 37 C.F.R. 1.132

I do solemnly and sincerely declare as follows:

1. I am a Professor in the Department of Chemistry at the University of California, Berkeley.
2. I have an undergraduate degree in Chemistry from MIT (class of 1966). I have a doctorate in Chemical Physics from Harvard University (class of 1969).
3. I have published widely on the topics of statistical physics, theories of structure and dynamics of liquid matter, hydrophobic effects and self-assembly. My contributions to science have been honored in various ways, including several National awards from the American Chemical Society and the American Physical Society, and election to Membership in the National Academy of Sciences.
4. I have studied the techniques and ideas used by Brian Sager and Martin Roscheisen to design a new class of nanolaminate barriers. Their methods exploit the forces of assembly due to hydrophobic interactions. The fact that they can succeed at creating highly ordered layered and extended structures that are largely impermeable to water is both remarkable and surprising. Using so-called "super-hydrophobic" units, as they do, would seem advantageous in order to accomplish water impermeability, but it is not obvious whether choice(s) of those units can assemble in a structure that is largely free of defects. The difficulty is that, in general, super-hydrophobic units attract one another too strongly to self-anneal. As such, one would expect, and in most cases experiments confirm, that such units produce assemblies with many defects, thus not allowing the material to serve as an effective barrier. I believe that Sager and Roscheisen's discovery of particular choice of a super-hydrophobic unit that does self-assemble into extended ordered layers is thus unprecedented.

In summary, as one skilled in the principles of self-assembly, I hereby declare that all statements made herein of my knowledge are true and that all statements made on information or belief are believed to be true; and further that I acknowledge that any willful false statements and the like so made herein are punishable according to the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signature: _____

David Chandler

Date: _____

June 11, 2009